



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/711,864

10/11/2004

Fang-An Shu

14150-US-PA

5863

31561

7590

09/16/2005

JIANQ CHYUN INTELLECTUAL PROPERTY OFFICE  
7 FLOOR-1, NO. 100  
ROOSEVELT ROAD, SECTION 2  
TAIPEI, 100  
TAIWAN

EXAMINER

NGUYEN, THANH T

ART UNIT

PAPER NUMBER

2813

DATE MAILED: 09/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

UK

<b>Office Action Summary</b>	Application No. 10/711,864	Applicant(s) SHU, FANG-AN	
	Examiner Thanh T. Nguyen	Art Unit 2813	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |  |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>10/11/04</u> . | 6) <input type="checkbox"/> Other: ____  |

## **DETAILED ACTION**

### ***Priority***

Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119

(a)-(d).

### ***Information Disclosure Statement***

The information disclosure statement filed on 10/11/04 has been considered.

### ***Oath/Declaration***

Oath/Declaration filed on 10/11/04 has been considered.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 5-11, 13-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Nakashima et al. (U.S. Patent No. 2003/0160921).

Referring to figures 1a-9, Nakashima et al. teaches claim 1. A method for fabricating poly-crystal indium tin oxide (ITO) film, the method comprising:

forming an amorphous ITO film (9, see paragraph# 48) on a substrate, and performing a rapid thermal annealing (RTA) process (heating at the temperature greater 180°C), to transform the amorphous ITO film into a poly-crystal ITO film (see paragraph# 48).

claim 2. wherein the step of forming the amorphous ITO film includes sputtering, physical vapor deposition, or chemical vapor deposition (see paragraph# 48).

claim 3. wherein a thickness of the amorphous ITO film is 400 - 1500 angstroms (80 nm= 800 angstrom, see paragraph# 48).

claim 5. wherein the substrate includes glass substrate, silicon substrate, or plastic substrate (see paragraph# 35).

claim 6. wherein substrate includes rigid substrate or flexible substrate (see paragraph# 35, noted that the glass substrate is rigid substrate).

claim 7. A method for fabricating poly-crystal indium tin oxide (ITO) electrode, suitable for use to form electrodes in a thin film transistor array, a color filter, a light emitting diode, or an organic electro-luminescence display, the method comprising:

forming an amorphous ITO film (9, see paragraph# 48) on a substrate,

patterning the amorphous ITO film (9, see figure 1F, paragraph# 49), to form a plurality of amorphous ITO electrodes (see paragraph# 23) on the substrate, and

Art Unit: 2813

performing a rapid thermal annealing (RTA) process (heating at the temperature greater 180°C), to transform the amorphous ITO electrodes into a plurality of poly-crystal ITO electrodes (see paragraph# 23, 48).

claim 8. wherein the step of forming the amorphous ITO film includes sputtering, physical vapor deposition, or chemical vapor deposition (see paragraph# 48).

claim 9. wherein a thickness of the amorphous ITO electrode is 400 - 1500 angstroms (80 nm= 800 angstrom, see paragraph# 48).

claim 10. wherein the step of patterning the amorphous ITO film includes:

forming a patterned photoresist layer on the amorphous ITO film (see paragraph# 49, figures 1F);

removing a portion of the amorphous ITO film by using the photoresist layer as the pattern as a mask, so as to form the amorphous ITO electrodes on the substrate, and removing the photoresist layer (see paragraph# 49, figures 1F). It is inherent that pattern the layer by photolithography process once has to form the pattern photoresist layer and used as a mask to etch the underlying layer to form a desire pattern.

claim 11 . wherein the portion of the amorphous ITO film is removed by oxalic acid (see paragraph# 49).

claim 13. wherein the substrate includes glass substrate, silicon substrate, or plastic substrate (see paragraph# 35).

Claim 14. wherein substrate includes rigid substrate or flexible substrate (see paragraph# 35, noted that the glass substrate is rigid substrate).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4, 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakashima et al. (U.S. Patent Publication No. 2003/0160921) as applied to claims 1-3, 5-11, 13-14 above in view of Chua et al. (U.S. Patent Publication No. 2005/0158902).

Nakashima et al. teaches claim 1. A method for fabricating poly-crystal indium tin oxide (ITO) film, the method comprising:  
forming an amorphous ITO film (9, see paragraph# 48) on a substrate, and  
performing a rapid thermal annealing (RTA) process (heating at the temperature greater 180°C),  
to transform the amorphous ITO film into a poly-crystal ITO film (see paragraph# 48).

However, Nakashima et al. does not teach the RTA process for ITO is operated under 400°C - 700°C for 0.5 - 6 minutes.

Chua et al. teaches RTA process for ITO is operated under 400°C - 700°C for 0.5 - 6 minutes (see paragraph# 59).

It would have been obvious to a person of ordinary skill in the requisite art at the time of the invention was made to optimize the temperature and the time range of forming a poly-crystal ITO film, since it has been held that where the general conditions of a claim are disclosed in the

Art Unit: 2813

prior art (i.e.- poly-crystal ITO film), discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233 (CCPA 1955).

The specification contains no disclosure of either the critical nature of the claimed arrangement (i.e.- wherein RTA process for ITO is operated under 400°C - 700°C for 0.5 - 6 minutes) or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen limitations or upon another variable recited in a claim, the applicant must show that the chosen limitations are critical. In re Woodruff, 919 F.2d 1575, 1578 (FED. Cir. 1990).

Therefore, it would have been obvious to person of ordinary skill in the requisite art at the time of the invention was made would form the poly-crystal ITO film with the specific temperature and time range in process of Nakashima et al. as taught by Chua et al. because the process would a stable ITO film in a short period of time.

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh Nguyen whose telephone number is (571) 272-1695, or by Email via address Thanh.Nguyen@uspto.gov. The examiner can normally be reached on Monday-Thursday from 6:00AM to 3:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead, can be reached on (571) 272-1702. The fax phone number for this Group is (571) 273-8300.

Art Unit: 2813

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956 (See **MPEP 203.08**).

A handwritten signature in black ink, appearing to read 'Thanh', with a long, sweeping horizontal stroke extending to the left.

Thanh Nguyen  
Patent Examiner  
Patent Examining Group 2800

TTN